

US EPA ARCHIVE DOCUMENT

Environmental Fate & Effects Division  
PESTICIDE ENVIRONMENTAL FATE ONE LINE SUMMARY  
**SULFOSATE**

Last Update on January 10, 1994

[V] = Validated Study [S] = Supplemental Study [U] = USDA Data

Common Name:SULFOSATE

Smiles Code:

PC Code # :128501

CAS #:81591-81-3

Caswell #:

Chem. Name :TRIMETHYLSULFONIUM CARBOXYMETHYLAMINOMETHYL-PHOSPHONATE

Action Type:Herbicide

Trade Names:TOUCHDOWN

(Formul'tn):

Physical State:

Use :NONSELECTIVE SYSTEMIC HERBICIDE FOR POSTEMERGENCE WEED  
Patterns :CONTROL  
(% Usage) :  
:

Empirical Form:  $C_3H_7NPO_5^- + SC_3H_9$

Molecular Wgt.: 245.23

Vapor Pressure: 4.00E -7 Torr

Melting Point : °C

Boiling Point: 110C@1AtmC

Log Kow : -5

pKa: @ °C

Henry's : E Atm. M3/Mol (Measured)

Solubility in ...

Comments

Water	E	ppm	@20.0 °C
Acetone	E	ppm	@ °C
Acetonitrile	E	ppm	@ °C
Benzene	E	ppm	@ °C
Chloroform	E	ppm	@ °C
Ethanol	E	ppm	@ °C
Methanol	E	ppm	@ °C
Toluene	E	ppm	@ °C
Xylene	E	ppm	@ °C
	E	ppm	@ °C
	E	ppm	@ °C

very soluble

Hydrolysis (161-1)

[V] pH 5.0:STABLE 25C

[V] pH 7.0:STABLE 25C

[V] pH 9.0:STABLE 25C

[ ] pH :

[ ] pH :

[ ] pH :

Environmental Fate & Effects Division  
PESTICIDE ENVIRONMENTAL FATE ONE LINE SUMMARY  
**SULFOSATE**

Last Update on January 10, 1994

[V] = Validated Study    [S] = Supplemental Study    [U] = USDA Data

Photolysis (161-2, -3, -4)

[V] Water: pH5 CAT. STABLE; AN. 14.6DA  
[V]        : pH7 CAT. STABLE; AN. 77.9DA  
[V]        : pH9 CAT. 31.7DA; AN. 41.6DA  
[ ]        :

[V] Soil :+ STABLE; ANION 382 HR  
[ ] Air :

Aerobic Soil Metabolism (162-1)

[V]	SOIL	pH	%OM	(+)	(-)
[ ]	SdLm	5.6	1.1	49 HRS	13HR
[ ]	LOAM	6.9	1.9	300 "	16 "
[ ]	SAND	6.7	2.5	29 "	33 "
[ ]	LOAM	5.7	6.2		19 "
[ ]					
[ ]					

Anaerobic Soil Metabolism (162-2)

[V] T1/2 FOR (+) MOIETY=2 MONTHS  
[ ] BASED ON CO2 EVOLUTION  
[ ]  
[ ]  
[ ]  
[ ]  
[ ]

Anaerobic Aquatic Metabolism (162-3)

[ ]  
[ ]  
[ ]  
[ ]  
[ ]  
[ ]  
[ ]

Aerobic Aquatic Metabolism (162-4)

[ ]  
[ ]  
[ ]  
[ ]  
[ ]  
[ ]  
[ ]

Environmental Fate & Effects Division  
PESTICIDE ENVIRONMENTAL FATE ONE LINE SUMMARY  
**SULFOSATE**

Last Update on January 10, 1994

[V] = Validated Study    [S] = Supplemental Study    [U] = USDA Data

Soil Partition Coefficient (Kd) (163-1)

[ ] Kd VALUES FOR TMS MOIETY:

[ ]	Sd	Si	Cl	%OM	pH	Kd
[V]	88	9	3	0.6	7.9	6.72
[V]	44	43	13	1.4	6.6	3.67
[V]	14	56	30	4.4	5.3	8.08
[V]			52	2.1	5.1	8.96

Soil Rf Factors (163-1)

[V]		CATION	ANION
[ ]	SdLm	.06	.20
[ ]	Lm	.01	.16
[ ]	Sd	.09	.08
[ ]	Lm	0.0	.16
[ ]			

Laboratory Volatility (163-2)

[ ]  
[ ]

Field Volatility (163-3)

[ ]  
[ ]

Terrestrial Field Dissipation (164-1)

[V]	FIELD STUDIES CONDUCTED IN VA, CA, IO, FL; APPL 6 LBS AIA:			
[ ]	STATE	CAP(-)	TMS(+)	AMPA (CAP DEGRADATE)
[ ]	VA	<7 DAYS	NON-DETECT.	VARIABLE
[ ]	CA, IO, FL	23-26 DAYS	30-50 DAYS	83-92 DAYS
[ ]				
[ ]				
[ ]				
[ ]				
[ ]				

Aquatic Dissipation (164-2)

[ ]  
[ ]  
[ ]  
[ ]  
[ ]  
[ ]

Forestry Dissipation (164-3)

[ ]  
[ ]

Environmental Fate & Effects Division  
PESTICIDE ENVIRONMENTAL FATE ONE LINE SUMMARY  
**SULFOSATE**

Last Update on January 10, 1994

[V] = Validated Study [S] = Supplemental Study [U] = USDA Data

Long-Term Soil Dissipation (164-5)

[ ]  
[ ]

Accumulation in Rotational Crops, Confined (165-1)

[ ]  
[ ]

Accumulation in Rotational Crops, Field (165-2)

[ ]  
[ ]

Accumulation in Irrigated Crops (165-3)

[ ]  
[ ]

Bioaccumulation in Fish (165-4)

[ ]  
[ ]

Bioaccumulation in Non-Target Organisms (165-5)

[ ]  
[ ]

Ground Water Monitoring, Prospective (166-1)

[ ]  
[ ]  
[ ]  
[ ]

Ground Water Monitoring, Small Scale Retrospective (166-2)

[ ]  
[ ]  
[ ]  
[ ]

Ground Water Monitoring, Large Scale Retrospective (166-3)

[ ]  
[ ]  
[ ]  
[ ]

Ground Water Monitoring, Miscellaneous Data (158.75)

[ ]  
[ ]  
[ ]

Environmental Fate & Effects Division  
PESTICIDE ENVIRONMENTAL FATE ONE LINE SUMMARY  
**SULFOSATE**

Last Update on January 10, 1994

[V] = Validated Study    [S] = Supplemental Study    [U] = USDA Data

Field Runoff (167-1)

[ ]  
[ ]  
[ ]  
[ ]

Surface Water Monitoring (167-2)

[ ]  
[ ]  
[ ]  
[ ]

Spray Drift, Droplet Spectrum (201-1)

[ ]  
[ ]  
[ ]  
[ ]

Spray Drift, Field Evaluation (202-1)

[ ]  
[ ]  
[ ]  
[ ]

Degradation Products

Aminomethylphosphonic acid (anion deg. from photolysis)

CO2 is major degradate of TMS moiety in aerobic soil study.

Environmental Fate & Effects Division  
PESTICIDE ENVIRONMENTAL FATE ONE LINE SUMMARY  
**SULFOSATE**

Last Update on January 10, 1994

[V] = Validated Study [S] = Supplemental Study [U] = USDA Data

Comments

Sulfosate consists of an N-(Phosphonomethyl) glycine anion and a trimethylsulfonium cation. The anion degrades to aminomethylphosphonic acid (AMPA) via photolysis (aqueous and soil).

There are discrepancies in the aerobic metabolism data; in addn. to that shown, Tl/2 for (+) in loam was 192 days in one study but in another was < 1 month based on CO2 evolution.

Tl/2 for (-) on soil was 382 hours, but (+) was stable.

In an anaerobic soil study, in 66 days 43% of radioactive (-) moiety was recovered as CO2.

References: EPA REVIEWS  
Writer : PJH